

Does Bank Size Matter? A Comparative Study of Risk, Return and Efficiency in Islamic Banking

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Abstract

This study examines whether bank size influences differences in risk, return, and operational efficiency in Islamic commercial banks in Indonesia. Despite the rapid growth of the Islamic banking sector, performance disparities among banks remain evident, raising questions about the role of bank size in shaping financial outcomes. The aims of this study is to analyze the performance of Islamic banks based on their size classifications. This research employs a quantitative comparative approach using panel data from 12 Islamic commercial banks over the period of 2021–2025. Bank size is categorized into four groups based on core capital, while risk, return, and efficiency are measured using Non-Performing Financing (NPF), Return on Assets (ROA), and Cost to Income Ratio (CIR), respectively. The analysis utilizes non-parametric statistical methods, particularly the Kruskal–Wallis test, due to non-normal data distribution. The findings reveal significant differences in risk, return, and operational efficiency across bank size groups. Smaller banks tend to exhibit higher risk, lower profitability, and lower efficiency, while medium-sized banks demonstrate the highest profitability and better efficiency. However, larger bank size does not always guarantee superior performance, indicating the presence of other influencing factors. In conclusion, bank size plays an important but not exclusive role in determining Islamic bank performance, highlighting the need for effective risk management and operational strategies.

Keywords

Bank size; Islamic banking; return; risk; operational efficiency

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1. INTRODUCTION

The Islamic finance, including in Indonesia, continues to show positive growth year after year despite unstable global economic conditions. In 2025, Indonesia's total Islamic financial assets grew by 34.36% surpassed the national financial sector's growth rate, which grew by only 15.8% (Syariah, 2025). According to the report on the Development of Indonesia's Islamic Finance (Keuangan, 2024a), this increase in Indonesia's Islamic financial assets enabled the country to rank 6th among nations with the largest Islamic finance industries in the world in 2024.

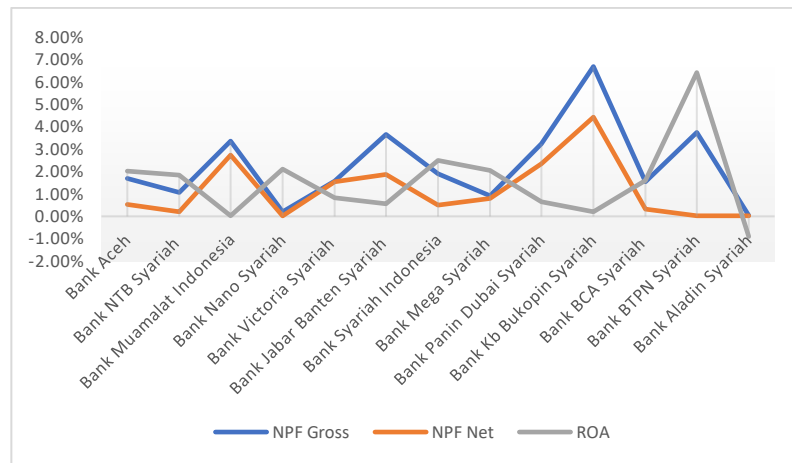


Align with development of Islamic finance in Indonesia, the Islamic banking sector (IB) has also continued to develop. Total Islamic banking assets reached Rp. 980.29 trillion, representing a 9.88% increase in 2024. This asset growth also indicates that Islamic banking continues to dominate the Islamic finance sector in Indonesia. From an intermediation perspective, the disbursement of Islamic banking financing reached Rp. 643.55 trillion, marking a 9.92% increase from the previous year. Additionally, total third-party funds in 2024 reached Rp. 753.60 trillion, representing a 10.09% increase from the previous year. This indicates that the liquidity of Islamic banking remains adequate, with a Financing to Deposit Ratio (FDR) below 90% (Keuangan, 2024a).

The health of the Islamic banking sector also remains strong. As mentioned earlier, liquidity levels in Islamic banking remain adequate, with an average FDR below 90%. Additionally, the profitability and efficiency of Islamic banking have shown positive trends, with the ROA (Return on Assets) ratio increasing from 1.86% to 2.04% and the BOPO (Operating Expenses to Operating Income) ratio decreasing from 78.97% to 76.34%. Only the aspect of financing quality saw a slight increase but remains in the “fairly good” category, with the average Gross NPF (Non-Performing Financing) rising from 2.04% in 2023 to 2.11% in 2024, and the Net NPF increasing from 0.68% to 0.78% in 2024 (Keuangan, 2024b)

While the Islamic banking sector has shown steady improvement year after year, this does not necessarily reflect the same conditions at every Islamic commercial bank in Indonesia. There are several Islamic commercial banks whose financial health or performance differs significantly from the average performance of the IB industry. Figures 1 and 2 show how the health or performance of each Islamic commercial bank, particularly in terms of risk, return, and efficiency, varies significantly.

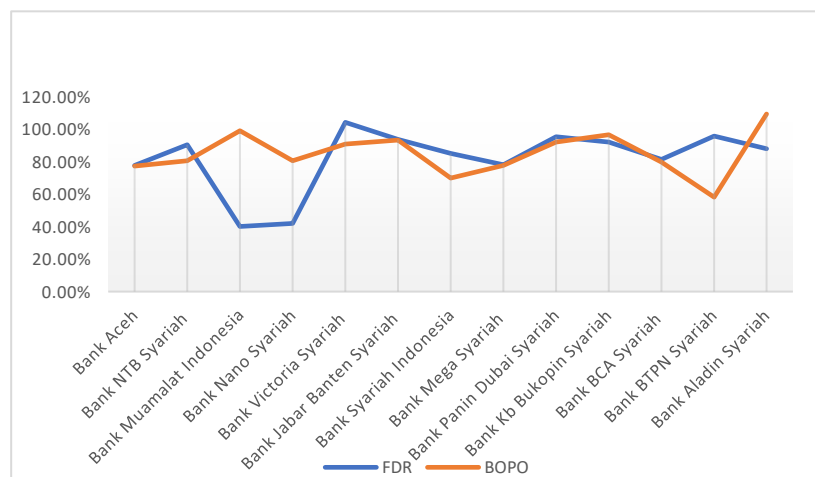
In Figure 1, regarding risk metrics measured by the NPF ratio (loan quality) shown that in 2024, Bukopin IB ranked highest with a Gross NPF of 6.69% and a Net NPF of 4.43%, while Nano IB ranked lowest with a Gross NPF of 0.20% and a Net NPF of 0.02%. This indicates a significant deviation from the average Gross NPF and Net NPF of the IB industry in Indonesia. Additionally, regarding the risk aspect measured through the FDR ratio (liquidity aspect) in Figure 2, it shows that in 2024, Bank Victoria Syariah ranked highest with an FDR of 104.18%. This inconsistent with the strategy of Islamic banks to maintain intermediary performance that prioritizes prudence (Keuangan, 2024b). Meanwhile, the lowest FDR ranking in 2024 was held by Bank Muamalat Indonesia, with an FDR of only 40.08%. According to (Syariah, 2025), this indicates excess liquidity and the potential for funds not yet optimally channeled. The FDR levels of these two Islamic commercial banks also show significant variation compared to the average FDR level in the Islamic banking sector in Indonesia.



Source: (Keuangan, 2024b)

Figure 1. NPF and ROA Ratios of Indonesia Islamic Commercial Banks in 2024

In the context of return or profitability, as measured by the ROA ratio, Bank BTPN Syariah (BTPN IB) ranked highest in 2024 with an ROA of 6.42%, while Bank Aladin Syariah (Aladin IB) recorded an ROA of -0.90% (Figure 1). This indicates a significant difference compared to the average ROA in the Islamic banking industry, which stood at 2.04% in 2024. Similarly, regarding efficiency measured using the BOPO ratio, BTPN IB held the lowest position in 2024, indicating good efficiency at 58.13%. Meanwhile, Aladin IB ranked highest with a BOPO value of 109.29% in 2024 (Figure 2). This also reflects a significant difference from the average BOPO of the Islamic banking industry, which stood at 76.34% in 2024.



Source: (Keuangan, 2024b)

Figure 1. FDR and BOPO Ratios of Indonesia Islamic Commercial Banks in 2024

Although the Indonesia’s IB industry has been growing year over year, it remains fall behind the conventional banking industry. The market share of Islamic banking in 2024 reached only 7.72%, while conventional banking remained stagnant at 92.28% (OJK, 2024). In a country where Islam is the

dominant religion, this certainly remains a challenge for Islamic banking to gain a foothold in the market.

Various strategies have been implemented to enhance the market share of Islamic banking in Indonesia. One of these involves mergers and acquisitions. In 2021, the Indonesian Minister of state-owned Enterprises decided to merge three Islamic commercial banks in Indonesia: BNI Syariah, BRI Syariah, and also Bank Syariah Mandiri (Ghozali & Kamri, 2022). This is expected to develop the performance of IB in Indonesia. Additionally, in 2025, PT Bank Tabungan Negara (BTN) an acquisition strategy by acquiring Bank Victoria Syariah as part of the spin off of BTN Syariah, BTN's Islamic Business unit into a commercial Islamic bank (BTN, 2025). This strategy will undoubtedly lead to the improvement in the total assets of these Islamic commercial banks.

According to data from the financial Services Authority (Keuangan, 2024b), Bank Syariah Indonesia currently ranks first with total assets of Rp. 408 trillion. Bank Syariah Nasional is also employing this acquisition strategy with the aim of becoming the second largest Islamic commercial bank in Indonesia after Bank Syariah Indonesia (BSI IB) (BTN, 2025). This indicates that larger Islamic banks are expected to deliver better performance, thereby enabling them to catch up with conventional banks.

Several previous studies have examined the performance of various IB, particularly regarding risk, return, and operational efficiency. Cangombe & Almeida (2025) demonstrated that credit risk, liquidity, and operational efficiency influence banking profitability and stability. In line with these findings, Carl et al. (2019) also emphasize the importance of risk management in enhancing banking efficiency and financial performance. In terms of IB, Hidayat et al. (2026) found that risk and efficiency play a significant role in shaping the performance of Islamic banks. Additionally, Nguyen (2025) and Mustafa & Al (2026) demonstrate that operational efficiency is closely linked to profitability.

However, research findings regarding the role of bank size have yet to yield consistent conclusions. Some studies, such as N. B. Nguyen & Vu (2025), found that larger banks tend to have higher profitability. On the other hand, Hasan (2025) showed that the impact on efficiency can vary depending on bank size. Feleke & Tafere (2025) also found that bank size is actually associated with increased credit risk. Although the relationship between risk, return, and operational efficiency is fairly clear, the role of bank size in this relationship still requires further investigation, particularly within the Indonesia's IB industry. Therefore, this study seeks to address this gap by assessing whether bank size influences performance differences in IB, as determined through the lenses of risk, return, and operational efficiency.

This study is projected to contribute to optimizing the potential of the Islamic banking sector in Indonesia, particularly through improved efficiency, profitability, and risk management, thereby

enhancing the competitiveness of the IB industry amidst the broader banking sector’s competition. Syariah (2025) notes that the contribution of Islamic financial institutions sector to the national economy is significant, amounting to 57%. This indicates that the potential of Islamic banking can still be enhanced to the point where it can dominate the market and have an even greater positive impact on the national economy.

2. METHODS

This study uses a comparative quantitative approach. The study seeks to analyze the differences in the performance of Islamic commercial banks in Indonesia in the context of risk, return, and operational efficiency across each bank size category. Bank size classification in Indonesia refers to Financial Services Authority Regulation No. 6/POJK.03/2016 on Business Activities and Branch Networks Based on Bank Core Capital, which divides banks into four groups based on core capital (Utari & Viverita, 2024). These four groups are described in the following table.

Table 1. Categories of Islamic Commercial Banks in Indonesia Based on Core Capital

Group	Core Capital Range	Islamic Commercial Banks in the Group	Average Core Capital ¹
1	Core capital less than Rp. 1 trillion	Bukopin IB	Rp. 572 billion
2	Core capital of Rp. 1 Trillion – Rp. 5 Trillion	Aceh IB, NTB IB, Muamalat Indonesia IB, Jabar Banten IB, Mega IB, Panin Dubai IB, BCA IB, Aladin IB	Rp. 2.6 Trillion
3	Core capital of Rp. 5 trillion – Rp. 30 trillion	Victoria IB, BTPN IB	Rp. 7.8 trillion
4	Core capital greater than Rp. 30 trillion	BSI IB	Rp. 48 trillion

¹Data in December 2025

Source: Indonesia Financial Services Authority (2026)

This study employs secondary data consisting of several key indicators. Risk is measured using the Non-Performing Financing (NPF) ratio (Hasan, 2025; N. B. Nguyen & Vu, 2025), return is measured using Return on Assets (ROA) (Belkhaoui et al., 2020; Cangombe & Almeida, 2025; Hasan, 2025; Hidayat et al., 2026), and operational efficiency is proxied using the Cost-to-Income Ratio (CIR) (Hasan, 2025; Hidayat et al., 2026; Mubarak et al., 2026; Mustafa & Al, 2026). In addition, the core capital data of each Islamic commercial bank is also used to determine the bank size category.

Core capital data is obtained from the quarterly Minimum Capital Adequacy Ratio (MCAR) Report published by the Indonesian Authority of Financial Services. Meanwhile, data on the NPF ratio, ROA, and BOPO are obtained from the Quarterly Financial Ratios Report, which is also accessible via the Financial Services Authority’s official website. The data used is panel data with an observation period from the 1st quarter of 2021 to the 4th quarter of 2025. This period was selected based on the consideration

that Bank Syariah Indonesia began operations in 2021, allowing this study to capture post-merger dynamics within the Islamic banking industry.

The population for this research consists of all Islamic commercial banks in Indonesia. Meanwhile, the sample was determined using purposive sampling, with the criterion being Islamic commercial banks that have been operating since 2021. Based on this criterion, 12 Islamic commercial banks were chosen as the research sample, as presented in Table 1.

This research employs the One-Way ANOVA analysis technique to test differences in risk, return, and operational efficiency across bank groups. Before conducting the comparison test, a normality test was first conducted to determine whether the data met the assumptions of data normality. If the data were normally distributed, the parametric method, specifically One-Way ANOVA, was used. Conversely, if the data were Non Normally Distributed, the non-parametric method, namely the Kruskal–Wallis test, was used (Frizky et al., 2023).

Subsequently, further analysis was conducted on each group of banks. In Group 2, a One-Way ANOVA was performed again to examine differences in risk, return, and operational efficiency among the banks within that group. Meanwhile, in Group 3, which consists of two banks, an Independent Samples T-Test was used to test differences between the two banks. The testing procedure for the Independent Sample T-Test followed the same steps as the One-Way ANOVA; if the data were Non Normally Distributed, a non-parametric alternative, the Mann–Whitney U test, was used (Nurafini, 2022). Additionally, descriptive statistical analysis was employed to provide an overview of the data and to strengthen the interpretation of the test results obtained in this study. The hypotheses of this study are as follows:

- 1) There are differences in efficiency among Indonesia Islamic commercial (ICB) banks based on bank size
- 2) There are differences in risk among Indonesia Islamic commercial banks (ICB) based on bank size
- 3) There are differences in returns among Indonesia Islamic commercial (ICB) banks based on bank size

3. FINDINGS AND DISCUSSION

3.1 Descriptive Analysis

This study aims to examine the differences in the performance of ICB, which are grouped into four categories based on bank size or capital. The performance of ICB in this study is assessed in the context of risk using the NPF variable, return using the ROA variable, and operational efficiency using the CIR variable. Table 2 below demonstrates the descriptive statistics results for each variable and each group of ICB.

Table 1. Descriptive Statistics Results

Variable	Group	Mean	Standard Deviation	Min	Max
NPF	1	0,041055	0,0066798	0,0261	0,0494
	2	0,010442	0,0111078	0,0000	0,0418
	3	0,001756	0,0032230	0,0000	0,0155
	4	0,006460	0,0016155	0,0000	0,0155
ROA	1	-0,005215	0,0202731	-0,0713	0,0058
	2	0,006439	0,0235	-0,1085	0,0408
	3	0,060956	0,0405760	0,0064	0,1157
	4	0,021900	0,0032090	0,0161	0,0251
CIR	1	0,847670	0,1632460	0,6132	1,3677
	2	0,833335	0,6680241	0,3084	5,0046
	3	0,550569	0,1932055	0,3671	1,0338
	4	0,494870	0,0168046	0,4604	0,5257

Source: Processed Data (2026)

Based on Table 2, the group of ICB with the highest risk level is Group 1, which consists of banks with assets or capital of less than Rp1 trillion. The bank included in this group is Bukopin IB. This is indicated by an average NPF ratio of 0.041, or 4.10%. Meanwhile, the group of Islamic commercial banks with the lowest risk level is Group 3, comprising banks with assets or capital between Rp5 trillion and Rp30 trillion. Banks in this group include Victoria IB and BTPN IB, with an average NPF ratio of 0.001, or approximately 0.17%. On the other hand, within Group 3, the minimum and maximum NPF ratio values indicate that Victoria IB exhibits higher fluctuations compared to BTPN IB.

In terms of return or profitability, the group of Islamic commercial banks with the highest return rate is Group 3, with an average ROA of 0.060 or 6.09%. Conversely, the group of Islamic commercial banks with the lowest return rate is Group 1, with an average ROA of -0.005 or -0.52%. As previously explained, the Islamic commercial bank in Group 1 is Bukopin IB. In addition to having a relatively high NPF rate, this bank also exhibits low profitability. Meanwhile, in Group 3, the Islamic commercial bank with the lowest ROA is Victoria IB, while the bank with the highest ROA is BTPN IB.

Regarding operational efficiency, measured by the CIR ratio, descriptive statistics indicate that the most efficient group of Islamic commercial banks is Group 3, with an average CIR ratio of 0.550 or 55.05%. Within this group, the bank with the lowest CIR ratio is BTPN IB, while the highest value is found at Victoria IB. In contrast, the group of Islamic commercial banks with the highest average CIR ratio is Group 1, at 0.847 or 84.76%. This indicates that Bukopin IB, in addition to having high risk levels and low profitability, also faces relatively higher operational costs.

Additionally, the group of Islamic commercial banks with the largest standard deviation across all variables is Group 2. This is because the number of banks in that group is relatively larger compared to the other groups, resulting in a higher level of data variation.

3.2 Hypothesis Test

Table 2. Normality Test Results

Variable	Kolmogorov-Smirnov Sig.	Shapiro-Wilk Sig.	Conclusion	Hypothesis Testing
NPF	0.000	0.000	Non Normally Distributed	Kruskal-Wallis
ROA	0.000	0.000	Non Normally Distributed	Kruskal-Wallis
CIR	0.000	0.000	Non Normally Distributed	Kruskal-Wallis

Source: Processed Data (2026)

None of the variables in this study are distributed normally, based on the results of the Kolmogorov-Smirnov and Shapiro-Wilk normality tests, as presented in Table 3. This is indicated by the significance values (sig.) for all variables being less than 0.05, thus confirming that the data are Non Normally Distributed. Therefore, the testing of hypothesis was undertaken using the Kruskal-Wallis nonparametric test (Islamiyah et al., 2023).

Table 3. Kruskal-Wallis Nonparametric Test Results

Variabel	Sig.	Conclusion
NPF	0.000	There is a significant difference
ROA	0.000	There is a significant difference
CIR	0.000	There is a significant difference

Source: Processed Data (2026)

Based on the results of the Kruskal-Wallis test in Table 4, it is evident that the analysis reveals significant differences among the groups of Islamic commercial banks studied, both in terms of risk (measured using NPF), return (measured using ROA), and operational efficiency (measured using CIR). Furthermore, the results of the Kruskal-Wallis test also show the ranking of each group for each variable, as presented in Table 5.

Table 4. Group Rankings by Variable

Variable	Group	Mean Rank
NPF	1	219,30
	2	116,19
	3	54,09
	4	116,05
ROA	1	42,78
	2	104,02
	3	185,23
	4	180,10
CIR	1	169,80
	2	124,31
	3	76,45
	4	64,83

Source: Processed Data (2026)

For the NPF variable, Group 1 had the highest rank with a mean rank of 219.30, while Group 3 had the lowest rank with a mean rank of 54.09. This indicates that Islamic commercial banks with smaller sizes or capital tend to have higher risk levels, particularly regarding credit risk. This finding aligns with the previous descriptive statistical results showing that Group 1 has the highest average NPF, while Group 3 has the lowest average NPF.

Meanwhile, for the ROA variable, Group 3 ranks highest with a mean rank of 185.23, followed by Group 4 with a mean rank of 180.10. Conversely, Group 1 ranked lowest with a mean rank of 42.78. These results are consistent with descriptive statistical findings showing that Group 3 has the highest profitability, while Group 1 has the lowest. Thus, it can be concluded that ICB with smaller sizes or capital tend to generate lower returns, likely influenced by higher risk levels. However, among groups with larger bank sizes, these results also indicate that banks with very large capital do not always generate significantly higher profit levels compared to other groups. This is reflected in the Kruskal-Wallis test results, which implies that the group with the largest bank size does not rank highest on the ROA variable.

For the CIR variable, Group 1 again ranked highest with a mean rank of 169.80, while Group 4 ranked lowest with a mean rank of 64.83. These results are also consistent with the descriptive statistics, which show that Group 1 has the highest average CIR, while groups with larger bank sizes tend to have lower CIR values. This suggests that Islamic commercial banks with smaller sizes or capital tend to be less efficient, as evidenced by the high ratio of operating expenses to operating income. Conversely, banks with larger size are likely to be more efficient in managing their operating expenses.

This study also conducted a comparison test on groups of Islamic commercial banks consisting of more than one bank, namely Group 2 and Group 3. Group 2 comprises Islamic commercial banks with a size or capital ranging from Rp1 trillion to Rp5 trillion, consisting of 8 ICB. As reported in Table 6, the normality test reveals that all variables have significance values below 0.05 in both the Kolmogorov–Smirnov and Shapiro–Wilk tests, suggesting a non-normal data distribution. Consequently, hypothesis testing was carried out using the Kruskal–Wallis nonparametric method to assess differences across banks within the group.

Table 5. Normality Test of Group 2 and Group 3

Group	Variable	Kolmogorov-Smirnov Sig.	Shapiro-Wilk Sig.	Conclusion	Hypothesis Testing
Group 2	NPF	0.000	0.000	Non Normally Distributed	Kruskal-Wallis
	ROA	0.000	0.000	Non Normally Distributed	Kruskal-Wallis
	CIR	0.000	0.000	Non Normally Distributed	Kruskal-Wallis

Group 3	NPF	0.000	0.000	Non Normally Distributed	Mann Whitney U
	ROA	0.003	0.001	Non Normally Distributed	Mann Whitney U
	CIR	0.000	0.000	Non Normally Distributed	Mann Whitney U

Source: Processed Data (2026)

Meanwhile, for Group 3, consisting of two ICB: Victoria IB and BTPN IB, performance comparisons were conducted using an independent samples t-test when the data were distributed normally, or a Mann Whitney U test when the data were non normally distributed. As shown in Table 6, the normality test results indicate that the significance values for all variables in both the Kolmogorov–Smirnov and Shapiro–Wilk tests are below 0.05, suggesting that the data do not follow a normal distribution. Therefore, the Mann–Whitney U test, a nonparametric approach, was applied for hypothesis testing. The results of the group comparison are reported in Table 7.

Table 6. Test of Differences Across Groups

Group	Variable	Sig.	Conclusion
Group 2	NPF	0.000	There is a significant difference
	ROA	0.000	There is a significant difference
	CIR	0.000	There is a significant difference
Group 3	NPF	0.010	There is a significant difference
	ROA	0.000	There is a significant difference
	CIR	0.000	There is a significant difference

Source: Processed Data (2026)

The results of the comparative analysis of the two groups of ICB, as presented in Table 7, indicate that there are no significant differences in the performance of ICB in either Group 2 or Group 3, whether in terms of risk, return, or operational efficiency. This finding indicates that performance among Islamic commercial banks can vary even when they are in groups with relatively similar sizes or capital. Thus, bank size is not the only factor influencing the performance of ICB. Nevertheless, in general, the results of this study still suggests a tendency that the larger the bank, the greater the opportunity for that bank to improve its performance.

Table 7. Islamic Commercial Bank Rankings by Variable

Group	Variable	Islamic Commercial Bank	Mean Rank
Group 2	NPF	Aceh IB	57,85
		NTB IB	71,30
		Muamalat Indonesia IB	111,05
		Jabar Banten IB	129,33
		Mega IB	93,60
		Panin Dubai IB	133,75
		BCA IB	29,10

Group	Variable	Islamic Commercial Bank	Mean Rank
	ROA	Aladin IB	18,03
		Aceh IB	118,55
		NTB IB	118,70
		Muamalat Indonesia IB	26,98
		Jabar Banten IB	57,25
		Mega IB	132,08
		Panin Dubai IB	73,25
	CIR	BCA IB	87,68
		Aladin IB	29,53
		Aceh IB	80,20
		NTB IB	61,45
		Muamalat Indonesia IB	134,50
		Jabar Banten IB	110,05
		Mega IB	18,65
Group 3	NPF	Panin Dubai IB	57,10
		BCA IB	39,65
	ROA	Aladin IB	142,40
		Victoria IB	11,04
	CIR	BTPN IB	19,78
		BTPN IB	10,50

Source: Processed Data (2026)

Table 8 shows the rankings of each Islamic commercial bank in Group 2 and Group 3. In Group 2, the ICB with the highest ranking for the NPF variable is Panin Dubai IB, with a mean rank of 133.75, while the lowest ranking is held by Aladin IB, with a mean rank of 18.03. In terms of return or profitability, the Islamic commercial bank with the highest ranking is Mega IB with a mean ROA rank of 132.08, while the lowest ranking is held by Muamalat Indonesia IB with a mean rank of 26.98. Furthermore, regarding operational efficiency, the Islamic commercial bank with the highest ranking, or indicating a higher level of inefficiency, is Muamalat Indonesia IB with a mean CIR rank of 134.50, while the lowest ranking, or indicating a higher level of efficiency, is carried out by Mega IB with a mean CIR rank of 18.65.

These findings indicate that among Islamic commercial banks in Group 2—banks with assets or capital ranging from Rp1 trillion to Rp5 trillion, Mega IB tends to perform better, particularly in the context of profitability and operational efficiency. Conversely, Muamalat Indonesia IB demonstrates relatively lower performance, especially regarding profitability and operational efficiency.

In Group 3, BTPN IB ranked higher on the NPF variable with a mean rank of 19.78 compared to Victoria IB, which had a mean rank of 11.04. Meanwhile, in terms of return or profitability, BTPN IB also holds the highest rank with a mean rank for ROA of 22.50, while Victoria IB has a mean rank of 6.50. Furthermore, regarding operational efficiency measured using the CIR ratio, Victoria IB ranked higher with a mean rank of 26.50, while BTPN IB had a lower mean rank of 10.50. Given that a higher CIR value reflects a greater level of inefficiency, this indicates that Victoria IB tends to be less efficient than BTPN IB.

This finding is consistent with the results of the previous descriptive statistical analysis, which showed that BTPN IB has a higher level of profitability and better operational efficiency compared to Victoria IB. Nevertheless, BTPN IB also exhibits a relatively higher level of risk. On the other hand, although Victoria IB has a lower risk rating, the results of the descriptive analysis suggest that its risk level tends to be more volatile compared to BTPN IB. This suggests that both banks face challenges in risk management, albeit with different characteristics.

3.3 Differences in Risk Among Islamic Commercial Banks in Indonesia Based on Bank Size

The study results indicate that there are significant differences in risk among ICB in Indonesia based on bank size. These findings suggest that bank size plays a role in determining risk levels, particularly credit risk in Islamic banking. Based on the test results, the group of banks with the smallest size (Group 1) ranks highest in risk, while the group of medium-to-large banks (Group 3) has the lowest risk level. These results align with descriptive statistical analysis, which shows that Group 1 has the highest average NPF, while Group 3 has the lowest average NPF.

This result is align with prior studies emphasizing the critical role of credit risk management in determining banking stability and performance. For instance, Cangombe & Almeida (2025) highlight that credit risk is a key factors of banking profitability and resilience, implying that banks with weaker risk management frameworks are more vulnerable to higher non-performing financing

Additionally, this finding partially aligns with Feleke & Tafere (2025), who report that bank size can influence credit risk dynamics, although the direction may vary depending on internal management capacity and external conditions . In the context of this study, smaller banks tend to face higher risk, suggesting that limited portfolio diversification and weaker monitoring capabilities play a more dominant role than scale advantages.

Furthermore, this result supports the argument of Carl et al. (2019), who emphasize that effective management of credit, liquidity, and solvency risks is essential to improving banking efficiency and performance . Therefore, while bank size contributes to risk capacity, the quality of risk management remains the primary determinant of financial stability.

3.4 Differences in Returns Among Islamic Commercial Banks in Indonesia Based on Bank Size

The results of the study suggests that there are significant differences in returns among ICB in Indonesia based on bank size. Based on the test results, the group of medium-sized banks (Group 3) ranked highest in terms of profitability, while the group of the smallest banks (Group 1) ranked lowest. This finding is consistent with the descriptive statistics, which show that Group 3 has the highest average ROA, while Group 1 has the lowest ROA values, which are even negative.

This indicates that larger banks have a better ability to generate profits, which may be attributed to operational efficiency, economies of scale, and the ability to manage assets optimally. This finding is in line with N. B. Nguyen & Vu (2025), who show that bank size positively affects return on assets (ROA), mainly through improved asset utilization and operational capacity

However, the results of this study also show that very large bank size does not always guarantee the highest level of profitability, as seen in Group 4, which did not rank first in the ROA variable. Thus, although bank size contributes to increased profitability, other factors such as efficiency, business strategy, and management quality also influence bank return performance. Such findings are consistent with Mustafa & Al (2026), who identify an inverted U-shaped association between efficiency and profitability, implying that performance improves until it reaches an optimal threshold, after which it begins to deteriorate.

Moreover, Hasan (2025) argue that regulatory capital (as a proxy for bank size) positively influences profitability, however, its effect may differ depending on on the scale and operational efficiency of banks . Thus, while banks with larger size may benefit from economies of scale, size alone does not guarantee superior profitability without effective strategic and operational management.

3.5 Differences in efficiency among Islamic commercial banks in Indonesia based on bank size

The study results indicate that there are significant differences in operational efficiency among ICB in Indonesia based on bank size. Based on the test results, the group of banks with the smallest size (Group 1) has the highest level of inefficiency, while the group of banks with the largest size (Group 4) demonstrates the best efficiency with a lower CIR value. These results are also consistent with the descriptive statistical analysis, which shows that Group 1 has the highest average CIR, while Groups 3 and 4 have lower CIR values.

These findings indicate that larger banks tend to be more efficient in managing operational costs compared to smaller banks. This may be driven by the concept of economies of scale, whereby larger banks are able to reduce operational costs relative to their revenue. Conversely, smaller banks tend to face limitations in operational efficiency, as reflected by their high cost-to-income ratios. This situation also results in low profitability and high risk for these banks.

This finding is consistent with prior studies emphasizing the role of cost efficiency in improving bank performance. Cangombe & Almeida (2025) emphasize that cost optimization is a crucial factor in improving profitability. In addition, Mustafa & Al (2026) demonstrate that operational efficiency has a significant impact in determining profitability and can act as a mediating variable between macroeconomic factors and bank performance. This supports the argument that efficiency is not only a consequence of bank size but also a driver of financial performance.

From an IB perspective, this finding is also consistent with Hidayat et al. (2026), who show that efficiency and risk jointly influence financial performance. Therefore, although banks with larger size benefit from economies of scale, efficiency ultimately depends on how well banks manage their operational structure and revenue streams.

4. CONCLUSION

Overall, the results of this research indicate that bank size influences the performance of ICB in Indonesia, particularly in the context of risk, return, and operational efficiency. However, bank size is not the sole determining factor; therefore, optimal management in the areas of risk management, efficiency, and business strategy is necessary to sustainably improve the performance of Islamic banking.

This study contributes both theoretically and practically. Theoretically, the findings enrich the literature on the role of bank size in determining Islamic banking performance, particularly in the context of developing countries like Indonesia, where results have historically been mixed. This study also reinforces the concept of the relationship between risk, return, and operational efficiency within the IB industry.

Practically, the findings of this study can serve as a basis for consideration by the management of Islamic commercial banks in formulating performance improvement strategies, particularly through strengthening risk management and operational efficiency. Additionally, for regulators such as the Financial Services Authority (OJK), the results of this research can serve as a foundation for formulating policies that support the strengthening of capital structures and the enhancement of the competitiveness of IB in Indonesia.

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